Abstract for
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JPL/Caltech Applications for the Cray T3D In A High Speed Networking and Meta Supercomputer Environment

Three applications involving the Cray T3D as a mat}-line in a High Speed Networking and Meta Supercomputing Environment will be discussed:

I. RIVA – Remote Interactive Visualization and -Analysis is an integrated software system for scientific data visualization and analysis. RIVA has two major components. 1). A GUI, called the Flexible Flyer, residing on an SGI workstation that acts as a navigator and a command and control element for 2). the main element residing on the T3D, a parallel perspective renderer and associated set of image analysis tools. As the Flexible Flyer navigates the data, the processed and rendered images are returned to the user's laboratory via a gigabit network. The result is the ability to employ the capabilities of the T3D in a completely interactive environment for large scale scientific data perusal and analysis.

II High Volume Synthetic Aperture Radar Processing. A complete software suite for SAR processing has been developed as a portable system of SPP codes. The initial target machines have been the T3D and the Intel Paragon. While currently operating on either machine as a standalone system, current proposed developments seek to permit flexible operation over a much larger networking environment - to include machines at the Goddard Space Flight Center in Greenbelt, Md. and at Ames Research Center in No. Ca.. The perspective being developed is to recognize that a long duration spaceborne SAR mission can easily overtax the capacities of any one institution's processing facilities. But by developing an environment that can seek out schedulable resources over a large national networking infrastructure, these missions can process large amounts of data without unduly impacting any one facility.

111. Scalable Synthetic Forces Simulation. Caltech/JPL have recently embarked on a new project for DARPA to design and implement a new scalable architecture for the DOD's Advanced Distributed Interactive Simulation program. DARPA, and the military services, have long

desired to be able to deploy much larger simulations involving DIS. A preliminary architecture permitting the simultaneous simulation of at least, 50,000 entities has been determined and experimental implementations have begun. The architecture is to view the Supercomputing network as a meta Supercomputer, employing at least two SW'S -- the Cray T3D at JPL and the Intel Paragon at Caltech - and potentially several more.